Report on
Survey of Power Generation Capacity
to
Montana Legislature
Energy and Telecommunications Interim Committee
and
Water Policy Interim Committee
per 85-1-501 MCA

Prepared by
Montana Department of Natural Resources and Conservation
Water Resources Division
State Water Projects Bureau
Hydropower Section

June 2018

BACKGROUND

Pursuant to 85-1-501 MCA, the Department is reporting on past and current studies conducted to assess the feasibility of establishing hydroelectric power generating projects at state-owned dams.

In 2012 Kleinschmidt was contracted by the Montana Department of Natural Resources & Conservation (DNRC) to perform an evaluation of the potential for small hydropower project development at three state owned dams in Montana. These dams were the Tongue River Dam in Big Horn County, the Painted Rocks Dam located on the West Fork of the Bitterroot River in Ravalli County, and the Cooney Dam located on Red Lodge Creek in Carbon County. They were selected for study because they had the highest potential for hydropower development. A fourth dam, Ruby Dam in Madison County, was evaluated by URS as part of the overall design and construction project for the rehabilitation of the Ruby Dam Spillway and Outlet Works.

The results of the Kleinschmidt study indicated that Cooney and Painted Rocks Dam developments would not result in a positive cash flow over the debt service. At the Cooney site, the principal cause for this site being uneconomic is the low annual power generation. At the Painted Rocks site, the cost to construct the approximately 15 miles transmission line results in the project revenues not able to support the total development cost. However, the Tongue River site had marginal feasibility under the study assumptions. The study recommended proceeding with a more detailed design to reduce project contingencies, determine actual cost data from equipment suppliers, and develop actual data regarding revenue, to further determine project viability.

Prior to completion of the studies, Federal Energy Regulatory Commission (FERC) Preliminary Permits were applied for and obtained for the Tongue River, Cooney, and Ruby Projects in order to allow the development of hydropower facilities at these sites if it was determined that it was

economically feasible to do so. The purpose of a Preliminary Permit is to grant the permit holder priority to file a license application during the permit term. Based on study results, the DNRC-held Preliminary Permits for Ruby, Cooney, and Tongue River were allowed to lapse.

Immediately after the State allowed its Preliminary Permit to expire, Hydrodynamics, Inc. applied for and secured a FERC Preliminary Permit for the Ruby site. DNRC supplied them with site information. A review of the FERC e-library indicates that there have been no filings since their 6-month status report on February 10, 2016.

RECENT EVENTS

Tongue River Power Project

On March 13, 2014 DNRC made application for a new FERC Preliminary Permit for Tongue River Power Project, a proposed hydroelectric project to be located below the Tongue River Reservoir in Big Horn County, Montana. On May 15, 2014 FERC notified DNRC that our application was accepted and issued a public notice.

The Northern Cheyenne Tribe filed a Notice of Intervention and Motion to Intervene with FERC, with reasons including protection of water quality and protection of the Tribe's water rights. The Tongue River Water Users' Association (TRWUA) filed a Motion to Intervene with FERC with reasons including significant financial obligations to the State and obligations to its members to deliver water from the Dam.

On July 30, 2014, FERC awarded DNRC a Preliminary Permit for the Tongue River Power Project, which was valid for three years. A request was made and granted to extend the permit period by an additional two years to allow completion of studies.

A contract has been awarded to prepare a detailed feasibility study for the development of hydropower at the Tongue River Dam. The contract calls for the final product to be sufficient to make the final determination whether to proceed with final design. If the project is currently infeasible, the consultant will outline the economic and physical conditions necessary for hydropower at this site to be feasible. The work scope includes reviewing historical data, developing power generation estimates, determining a suitable turbine/generator, preparing preliminary drawings, developing cost estimates and an economic analysis, developing transmission line plans, assessing FERC compliance issues, assessing environmental impacts, and preparing a Final Report. The work is expected to be concluded before the end of 2018.

Broadwater Power Project (Toston Dam)

The Broadwater Power Project is the only state-owned hydroelectric project. The irrigation water diversion dam was completed in 1940 and the powerhouse was completed in 1989. As a run of the river project, power generation is dictated by river flows.

The maximum power rating is 10-megawatts (MW). Annually, our power generation averages approximately 6 MW, depending on actual river flow. Net revenue from the sale of power, after supporting Project operations, is deposited into a Rehabilitation Hydro Account and is used for

rehabilitation efforts at DNRC water storage projects across the state. Depending on production, recent annual net proceeds have varied from $1.5M to $2.5M.

The original bond for Project construction was paid off in December 2017. Revenue previously devoted to bond payments is being used to improve Project documentation and upgrade or replace equipment, much of which is over 25-years old. This is expected to be a multi-year effort. Initial efforts are directed toward the control system, electrical hardware, and local network (particularly with regard to cybersecurity).

A FERC-mandated five-year Project safety inspection was conducted by an outside consultant with a final report produced in June 2017. The inspection found that the Project is safe, but rewrote the potential failure modes analysis to comply with current requirements. It also recommended analysis to document earthquake stability of the abutment sections; this work is underway.

The current FERC license of the Broadwater Power Project expires in June 2024. FERC regulations require a Notice of Intent (NOI) to relicense and a Pre-Application Document (PAD) to be filed five to five-and-a-half years prior to license expiration. A contract is in place to assist with this effort. Preliminary meetings with resource agencies are being held. We are on schedule to submit the NOI and PAD in January 2018. Significant effort will be required over the next several years to complete the relicensing process.

FUTURE RECOMMENDATIONS

Upon receipt of the Final Report on the feasibility study for the development of hydropower at the Tongue River Dam, a determination will be made on how to proceed. If it is determined that it is feasible to place a hydroelectric generator there, future actions will be governed by MCA 85-1 Part 5.

We plan to continue with Project upgrades including mechanical systems (2 oil systems, 2 water systems, compressed air, blowers for rubber gates), replacement of the jetty separating the Project intake from the irrigation canal intake, refurbishment of the trash rake, inspecting and repairing the spillway concrete, and upgrading powertrain components (turbine, seal, wicket, generator, gearbox, downstream gate).

We will continue to take the steps necessary to complete the FERC relicensing of the Broadwater Project. In addition, the current Power Purchase Agreement (PPA) also expires in June 2024. Efforts to put another PPA in place will begin in the 2020 to 2021 timeframe.

As FERC guidelines change with time and power rates change fluctuate, other projects may warrant further review and analysis. Power purchase rates will be watched with particular interest. No other sites are proposed for detailed review at this time.